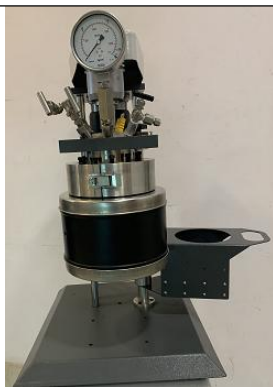


High Pressure Bench Top Laboratory Reactors Series 30X

 Reactor BT-SR3065 with welded jacket	These are Standard removable head or fixed head reactors capacity 500 mL to 750 mL. These vessels are rated for maximum working pressure of 140 bar. The maximum operating temperature with PTFE gasket for up to 350 °C The reactors are equipped with gas inlet and outlet valves, a liquid sampling valve, pressure gage, safety rupture disc, internal thermocouple and external thermocouple in addition to the internal stirrer. The mounting is on base plate with four buffers to take vibrations at high RPM The heavy-duty base allows to use various options like BPR, condenser, cooling coil etc.
--	---

Model Number	BT-SR3045	BT-SR3065
Volume mL	500 mL	750 mL
Maximum Pressure	2000 psig (140 Bar)	
Maximum Temperature	350 Deg Centigrade	
Temperature Sensor	Type K Thermocouple	
Vessel Internal Dia. mm	76 mm	76 mm
Vessel Internal Depth mm	115 mm	165 mm
Closure	Split ring with PTFE gasket (Six 3/8" UNF compression bolts)	
Motor	Variable speed DC motor 90 watt 0~ 3000 RPM	
Magnetic Drive	16 KgF-Cm torque with belt drive for 0-2000 RPM	
Impeller 4 blade Dia. mm	39 mm	39 mm
Internal Cooling Option	Cooling Loop	
Valve	Swagelok 1/8" NPT , outlet 0.25 inch tube adaptor Gas inlet, Liquid sampling, gas vent	
Pressure Gauge	0~3000psig/200Bar,100 mm dia	
Heater	850 W	1000 W
Controller	Programmable temperature control with DC-SSR, RPM control with DC regulated power supply, over temperature safety cut-off. Display of Reactor temperature, RPM , heater temperature , Option for Pressure display	
Power	230 V 50 Hz.1 Phase	

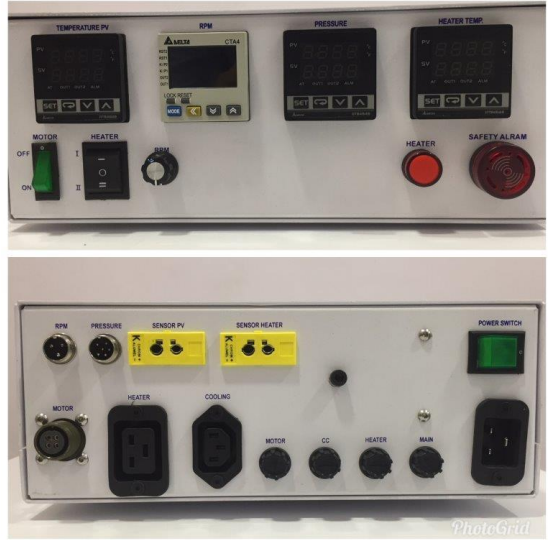
High Pressure Bench Top Laboratory Reactors Series 40X

		These are Standard removable head or fixed head reactors capacity 1000mL to 2000 ml. These vessels are rated for maximum working pressure of 140 bar. The maximum operating temperature with PTFE gasket for up to 350 °C The reactors are equipped with gas inlet and outlet valves, a liquid sampling valve, pressure gage, safety rupture disc, internal thermocouple and external thermocouple in addition to the internal stirrer. The mounting is on base plate with four buffers to take vibrations at high RPM The heavy duty base allows to use various options like BPR, condenser, cooling coil etc.
Reactor BT-SR4050 Fixed Head	Reactor BT-SR4050 Removable Head	
		
Reactor BT SR5065 Fixed Head	Reactor BT-SR40100 Removable Head	

Model Number	BT-SR4050	BT-SR40100	SR5065
Volume	1000 mL	2000 mL	2000 mL
Maximum Pressure	2000 Psi (140 Bar)		
Maximum Temperature	350 Deg Centigrade		
Temperature Sensor	Type K Thermocouple		
Vessel Internal Dia. mm	100 mm	100 mm	125
Vessel Internal Depth mm	130 mm	260 mm	165
Closure	Split ring with PTFE gasket (Ten 3/8" UNF compression bolt)		
Motor	Variable speed DC motor 90 watt 0~ 3000 RPM		
Magnetic Drive	16 KgF-Cm torque with belt drive for 0-1500 RPM		
Impeller 4 blade Dia. mm	65 mm	65 mm	80 mm
Internal Cooling Option	Serpentine Cooling Coil		
Valve	Swagelok 1/4" NPT , outlet 0.25 inch tube adaptor Gas inlet, Liquid sampling, gas vent		
Pressure Gauge	0~2000psig/140Bar,100 mm dia		
Heater	1000 W	1500 W	1500 W

Controller	Programmable temperature control with DC-SSR, RPM control with DC regulated power supply, over temperature safety cut-off. Display of Reactor temperature, RPM , heater temperature , Option for Pressure display
Power	230 V 50 Hz.1 Phase

Controllers 4X48

	The controller can be provided with Four slots (48x48) or Five slots (Three 48x48 , Two 48x24) PID (Proportional - Integral - Derivative) with Ramp & Soak RPM Display Pressure Display Vessel surface temperature display Motor current display RS 485 interface
--	---

Microprocessor controllers operate with three different mode.

PID (Proportional - Integral - Derivative)

Proportional-Integral-Derivative Systems have three control functions.

Proportional control adjusts the heating in proportion to the temperature difference from the set point. Integral function compensates for any temperature control offset from the set point. The derivative function deals with the rate of change of the temperature.

This control can rapidly bring a system to a desired temperature with little or no overshoot and smooth, continuous regulation. These controllers are now self-tuning so that they can set the proportional band, compensate for any offset and adjust the proportional action to ensure that the temperature in the controlled system will be held at the set point with minimal deviation.

Ramp and Soak Programming

This control option allows the operator to program a time and temperature profile into the controller for automatic execution. This can consist of a series of different temperature settings and the length of time each is to be held. The rate of change from one setting to another can also be controlled if the changes are within the capability of the heating and/or cooling system. An additional feature provides for control of the approach to a critical temperature when overshoots cannot be tolerated. A visual display prompts for all programming and timing functions.

Cascade Control

This control option utilizes two temperature sensors: One internal and one external to provide superior performance in difficult control systems.

Additional External temperature module is added to control unit to read and control heater temperature.

This is particularly effective for heating systems with large thermal lags, such as thick walled vessels or vessels with glass or PTFE liners, with low operating temperature; where temperature overshoot has to be avoided.

Separate Heating and Cooling Control Loops

The controllers actually have two separate PID control loops; one for heating and a second one for cooling. The second loop with its own self-tuning parameters can be used to activate a solenoid valve to control the flow of coolant through an installed cooling coil.

Control Module Specifications

Operating Range	0-600° C
Digital Readout Resolution	1° C
Digital Set point Resolution	1° C
System Accuracy	+/-2° C
High Limit Alarm	Red LED and Audio
Thermocouple Burnout Prot.	Yes
Thermocouple	Type K
Communications Module	Serial port RS485

Option 1 RPM Display Module

This module provides a means for continuously monitoring the stirring speed in reactors, offering a particularly valuable feature since all reactors are normally equipped with variable speed motors with real time position sensor. The digital display will show the stirring speed with 1 rpm resolution and +/- 5 rpm accuracy.

Option 2 Pressure Display Module

This module provides a digital readout for continuously monitoring the pressure within the reactor, plus a back-up safety feature which will shut down the heater if a pre-set maximum pressure is reached. Pressure is displayed with 1 psi resolution and 10 psi accuracy normally calibrated from 0 to 250 Bar. Higher or lower ranges are available by special order. The safety cut-off feature offers excellent protection against accidental over-pressurization by allowing the user to set a maximum pressure which, if reached, will activate a lock out relay and shut down the system heater immediately.

The signal for the pressure display is generated by a transducer in a stainless steel housing mounted on the reactor near the pressure gage.

Option 3 Heater Temperature Cut-off Module

This module provides a completely redundant high temperature safety cut- off which will shut down the heater in case of an unusual malfunction in the primary control system.

The option also provides a means for measuring vessel wall temperatures to avoid temperature overshoot and/or to protect PTFE liner.

Option 4 Current Display Module

This module provides a means for continuously monitoring the current being drawn by the stirrer motor. Since the motor speed control will provide a constant stirring speed at any given setting, changes in the current drawn by the motor will correspond to changes in the viscosity of the reactants in the vessel. This will be a useful option for users who want to monitor the progress of a polymerization reaction in which there is a viscosity change as the reaction proceeds.

Option 5 Solenoid Valve Module

This module provides a solenoid valve and all parts needed to assemble an automatic flow control system for controlling the flow of coolant through a cooling coil in any reactor. It usually is installed in a cold-water line with a flow connection to the cooling coil and an electrical connection to an output socket provided at rear side of controller.

Magnetic Drive



The Stirred reactors are equipped with magnetic drive to provide service free link to internal stirrer.

These are high torque magnetic drive available as 16 KgF-Cm , 50 KgF Cm or 80 KgF Cm torque.

These drives are provided with housing which is tested to 350 Bar pressure. The mounting is 9/16-18 UNF or M16 for 16KgF Cm torque magnetic drive. The Mounting port for 50 KgF-Cm can be M24 or 1" UNF and 80 KgF M28 or 1.25"UNF

These magnetic drives are assembled with specially designed Nd. Fe. B permanent magnets which have excellent temperature stability and can be depended upon to operate for long periods with little or no flux degradation.

Magnets for the inner rotor to which the stirrer shaft is attached are enclosed in a stainless steel (or other alloy) housing and supported by carbon-filled, PTFE bushings to provide a long life, chemically inert stirring system.

Magnets for the outer drive are also fully enclosed and supported by twin, high quality sealed ball bearings for smooth operation and long life.

A water-cooling sleeve attached to each drive protects the components from excessive heat arising from the reactor.

We can provide magnetic drive with 60-watt motor and RPM sensor. Complete unit can be mounted on M16 or 9/16UNF port.